PATENT SPECIFICATION

DRAWINGS ATTACHED

838,637

Date of Application and filing Complete Specification: June 9, 1958.

No. 18381/58

Application made in France on Feb. 7, 1958.

Application made in France on Feb. 27, 1958.

Complete Specification Published: June 22, 1960.

Index at Acceptance:—Classes 94(1), C7A; 138(1), O; and 138(2), A1K.

International Classification:—A47l. B65b. D06f.

COMPLETE SPECIFICATION

Improvements in and relating to Devices for the Introduction of Processing Products into Washing Machines

We, LADEN S. A., a Company organized under the laws of France, of 3, rue Monceau, Paris 8, France, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The introduction of processing products into washing machines such as machines for washing linen or dishes, would at first sight seem to be a simple problem to solve, yet in actual fact it raises several difficulties.

Pulverulent products such as detergents tend to agglomerate and harden with ageing, and this tendency is accentuated when they are stored in an atmosphere which is not absolutely dry. They then become difficult to proportion and to dissolve. Products like bleaching water are furthermore dangerous to handle.

However, modern conditioning techniques, which make use of packages (for example, plastic packages) and in which each package contains the requisite amount for a single processing operation, enable the major part of these difficulties to be overcome.

The present invention has for its object a simple device which makes use of such packages and which ensures precise proportioning, safe handling and perfect dissolving of the processing products usually employed in machines of this kind.

According to the invention there is provided apparatus for the introduction into washing machines of packages containing prescribed amounts of processing materials, comprising an auxiliary chamber communicating through a passage with the main washing chamber of the washing machine and adapted to hold the package, a tool for partially destroying the package and setting free the processing materials, and externally operated means for actuating said tool.

A device according to the invention may also include means for the introduction, singly, into this auxiliary chamber, of full packages contained in a storage chamber.

In particular, proportioned quantities of processing products may be superposed in a storage space the lower part of which is connected to the auxiliary chamber, a drawer or similar device being provided to push the proportioned amounts one by one into this chamber. The drawer device referred to may, for example, be controlled by a solenoid similar to the one which actuates the package-destroying tool.

In the particular case wherein the processing products are in the form of agglomerates or tablets, the storage space for these products is connected to the auxiliary chamber and the package-destroying tool is shaped so as to be able after at least partial destruction of the package to crush such tablets or agglomerates.

Such a device may also be made to comprise a sluice-valve, for example, to enable rinsing water to be despatched to the auxiliary chamber and thus cause the whole of the processing product to be passed into the main washing chamber.

Clearly, any means may be used to free the processing product from its package, namely, perforation, cutting, pressure or fusion.

Further characteristics of our invention will become apparent from the following description taken in connection with the accompanying drawings, given by way of example only and not in any limiting sense, and in which:—

Fig. 1 is a schematic sectional view of the device according to the invention:

Figs. 2 and 3 are schematic partial section views of two possible variants;

Fig. 4 illustrates a schematic sectional view of yet a further variant.

The chamber 1, containing the objects to be washed, may be of any type watsoever. Into this main chamber discharges a pipe 2 connecting it with the auxiliary chamber 3. In this latter chamber is housed the package 4 containing the product to be introduced into the main washing chamber. These packages, such as 4,

[Price 3s. 6d.]

Price 75c

may be introduced manually one by one, say into the upper part of the chamber 3 after removal of the lid 5. They could alternatively be contained in a storage space (not shown) and be introduced into this chamber, either by gravity or by the action of some pushing device.

Various ways of at least partially destroying the package 4 may be employed to liberate the product contained in it.

In the embodiment illustrated by Fig. 1, which is more particularly intended for automatic washing machines, partial destruction of the package 4 is obtained by means of a tool 6, having an appropriately shaped lower extremity 7, which passes through an opening provided in the lid 5.

Actuation of this punch 6 is automatic, for example by means of a solenoid 8 which, on being energized, provokes downward travel of the tool 6 through the package 4, as shown by the dotted lines at 6*a*. The product contained in the package 4 then drops into the chamber 1 through the pipe 2.

It is preferable to ensure that a quantity of water reaches the chamber 3, this being caused to be produced by means of the sluice-valve 9 which, in this instance, should preferably be electrically controlled. Arrival of this rinsing water ensures that the whole of the product contained in the package 4 is swilled out into the chamber 1.

In the variant shown Fig. 2, advantage is taken of the fact that the package 4 is generally made of fusible plastic material, so that this package 4 is made to rest on a shielded electric resistor 10. It will be appreciated that energizing of this resistor produces the heat required to fuse the packaging material, thus enabling the product contained in it to reach the chamber 1. In automatic machines, this energizing of the resistor is effected at the required moment by any method well-known per se.

Fig. 3 illustrates an embodiment specially designed for semi-automatic machines. The same basic components as those used for the embodiment in Fig. 1 are used here, but in this instance the tool 6 is manually operated by the push-button 11 and is subjected to the influence of the return spring 12. With the sole exception that actuation of the tool 6 is manual, the device shown in Fig. 3 works in exactly the same way as that illustrated in Fig. 1, only in this case the operator himself sets off its operation at the instant he judges desirable.

Obviously, the embodiments in Figs. 2 and 3 may also include the water-provision system shown in Fig. 1.

In the embodiment shown in Fig. 4, a storage space 20 is provided containing a certain number of proportioned quantities 21, 22, etc. A conduit 13 connects the bottom of this storage space to the auxiliary chamber 3, the shape and dimensions of the conduit being, like those of the storage space, adapted to the shape and size of the proportioned quantities.

This conduit 13 has a diametrically opposed extension conduit 14, so that a pushing or similar device 15 can be moved along inside them both, said pushing device 15 being integral with a rod 16 which is enclosed by a solenoid 17.

This particular layout works as follows: the proportioned quantities being piled up one on top of the other in the storage space 20, the bottom one is located opposite conduits 13 and 14; having been suitably wired up into the machine's automatic-operation control-circuit, the solenoid 17 is energized at the required moment, so that it repels the rod 16, while the pusher 15 thrusts the proportioned quantity 21 into the auxiliary chamber 3 through the conduit 13. The tool 6 then comes into operation to destroy the package and disaggregate this quantity: for this purpose, the latter may be caused to rest on a grating 18. Naturally, the portion 7 of the tool 6 is shaped in accordance with the job it is required to perform: destruction of a package casing and if required disaggregation of an agglomerate.

WHAT WE CLAIM IS:—

1. Apparatus for the introduction into washing machines of packages containing prescribed amounts of processing materials, comprising an auxiliary chamber communicating through a passage with the main washing chamber of the washing machine and adapted to hold the package, a tool for partially destroying the package and setting free the processing materials, and externally operated means for actuating said tool.

2. Apparatus as claimed in claim 1 in which said tool is a movable plunger actuated to perforate or cut the package.

3. Apparatus as claimed in claims 1 and 2 in which the plunger is operated automatically from the washing machine controls.

4. Apparatus as claimed in claim 3 in which said plunger is operated by a solenoid.

5. Apparatus as claimed in claim 2 in which said plunger is manually operated against the resistance of a spring.

6. Apparatus as claimed in claim 1 in which said tool is heated to fuse said package.

7. Apparatus as claimed in claim 1 in which said tool is heated electrically.

8. Apparatus as claimed in claim 7 in which said tool is an electric resistor in which the package rests.

9. Apparatus as claimed in any one of claims 6, 7 and 8 including means for preventing passage to the washing machine of any undestroyed part of the package.

10. Apparatus as claimed in claim 9 in which said means for preventing passage of the undestroyed part of the package to the washing machine is a perforated plate.

11. Apparatus as claimed in claims 1 to 10, in which a storage chamber containing a plurality of packages is provided with means for feeding one package at a time to the auxiliary

chamber.

12. Apparatus as claimed in claim 11 in which said means is operated automatically in conjunction with the control of the washing machine.

13. Apparatus as claimed in claim 12 in which said means is a piston.

14. Apparatus as claimed in claim 13 in which said piston is operated by a solenoid.

15. Apparatus as claimed in claims 1 to 5 in which the processing materials are in tablet form and the tool is adapted to crush the tablets.

16. Apparatus as claimed in claim 1 in which the passage is provided with a sluice valve through which rinsing water is fed to said washing machine.

17. A washing machine provided with apparatus as claimed in claims 1 to 16.

18. Apparatus for the introduction into washing machines of packages containing prescribed amounts of processing materials substantially as described herein with reference to the accompanying drawings.

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Agents.

Printed for Her Majesty's Stationery Office by J. Looker Ltd., Poole, Dorset. 1960.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

Fig. 1

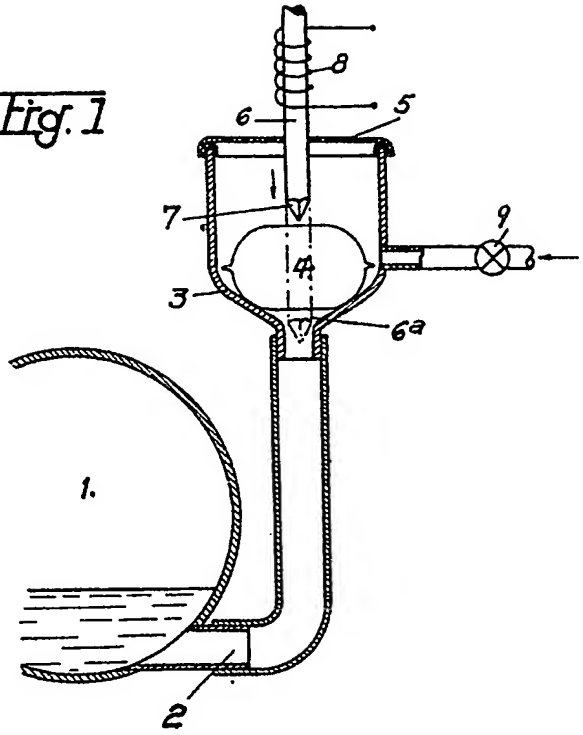

Fig. 4

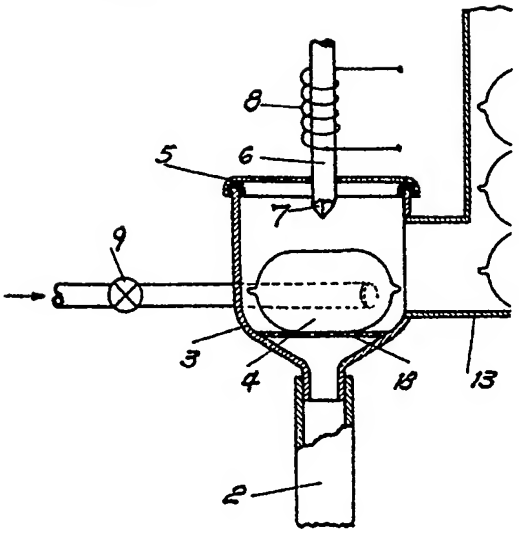

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Fig. 2

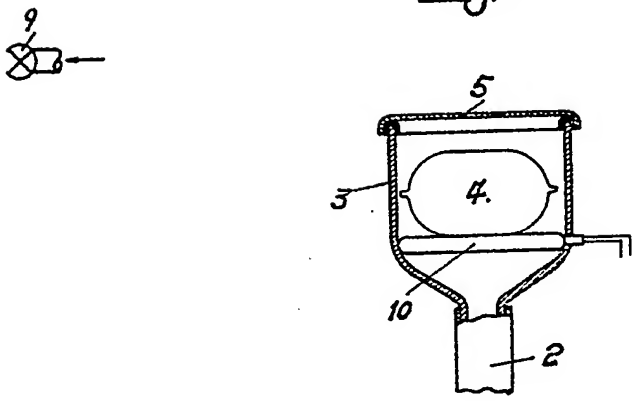
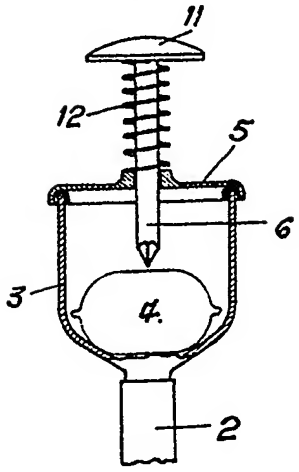


Fig. 3



g. 4

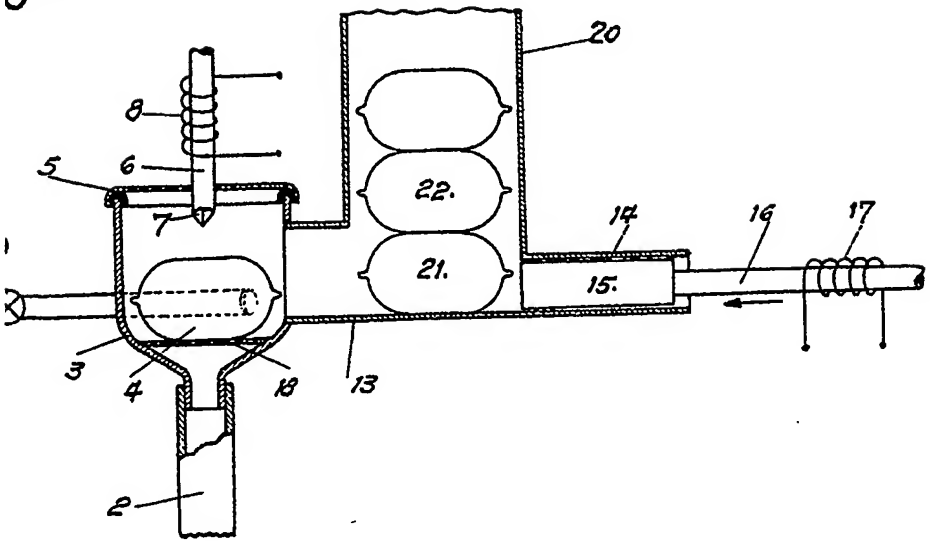


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Fig. 1

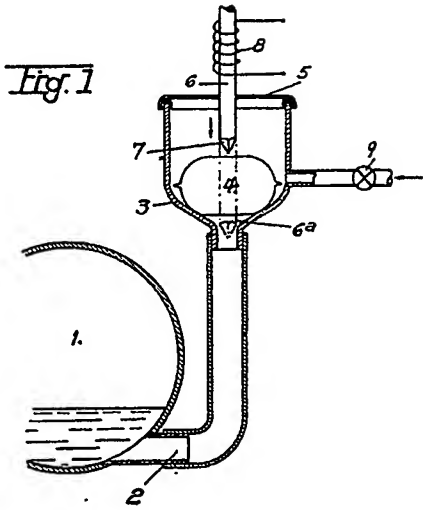

Fig. 2

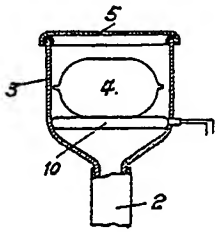

Fig. 3

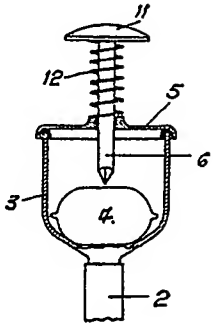

Fig. 4